

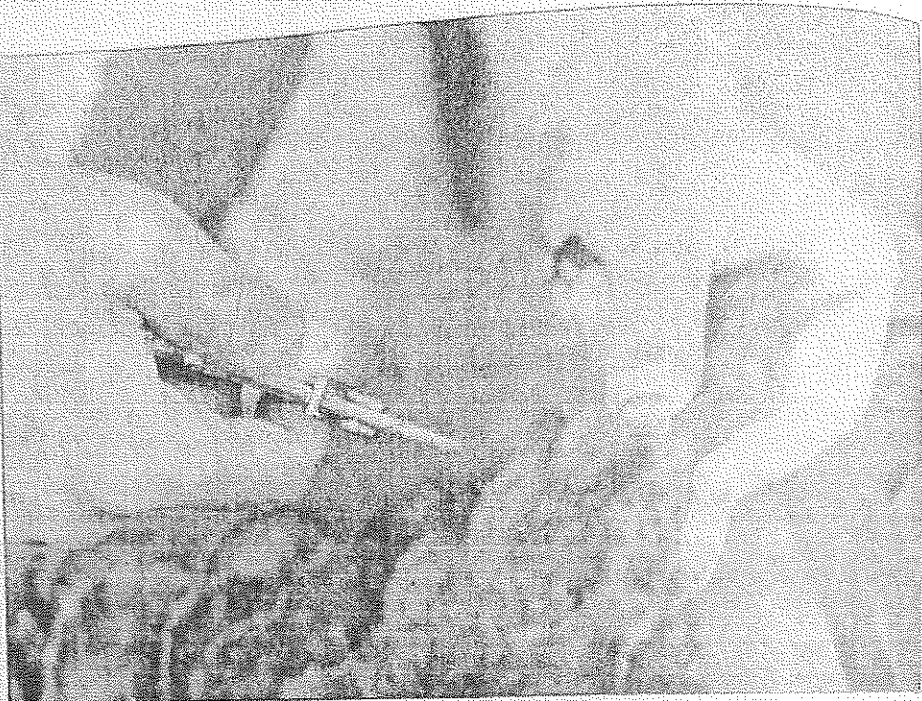
PARADOX

BIO-TECHNOLOGY : MYTHS & REALITIES

Biotechnology is the buzzword of Indian agriculture, as the country is at the launchpad of the next millennium. The deed of Norman Borlaug, way back in the 60's seems to emerge in a new package, namely, biotechnology. Basically it is a technique, that uses living organisms, or substances from these organisms, to make or modify a product, including techniques used for improving the characteristic of economically important plants. The knowledge gene splicing and genetic engineering have given the concept a new dimension but simultaneously, it has been marked with varying degree of scepticism.

That biotechnology is going to benefit the farmers is conceived by all. However it seeks to "industrialize agriculture" even further converting agriculture into a branch of industry. It is the Third World farmers who are jeopardized at the most. 70,000 farmers in Madagascar, growing vanilla were ruined when a Texas firm produced vanilla in biotech labs. Groundnut growers in Senegal were totally perplexed with the fate of their produce as Unilever cloned oil-palm gradually gobbed up the edible oil market in a global perspective.

The basic theme of biotechnology is to feed the hungry of the world, by elevating the productivity of the crops, but the paradox prevails. Most biotechnology research originates in the industrialized countries and naturally reflects their economic and social conditions. It serves desires of the rich rather than the needs of humanity. While investments are made in the arena of biotechnology in the form of



genetically modified organisms (GMOs), two major objectives are focused - to seek a new marketable trait for a product or to find an import substitute. Commercialization involves a limited range of crops for which there are large and secure markets, targeted to relatively capital-intensive production system. It is difficult to conceive how such technology will be introduced in Third World countries to favour masses of poor farmers. The Transnational corporations (TNCs) come with a sole purpose of profit making using biotechnology as a tool. Greater food production is a veil, behind which lie the desire of recapturing the huge consumer market of developing countries.

The Third world countries are now witnessing a "gene rush" as Government and TNCs aggressively scour forests, crop fields in search of new genetic gold. When the concept of biotechnology came into vogue, it highlighted that it will not attempt

to hamper the ecological sovereignty of the Third World countries. With the advent of time one witnessed now, the corporations have made billions of dollars on seeds developed in US labs from germplasm that farmers in the Third World have carefully bred over generations. Peasants go unrewarded for their millenary knowledge of what to grow, while TNCs stand to harvest royalties worth billions. While the world may lack food and suffer pesticide pollution, the major focus of biotechnology is profit maximization and not philanthropy.

Biotechnology promises to give mankind softer technologies and will launch a period of chemical free agriculture. Monsanto, the global giant defended against the environmental charges and stated that its transgenic crops are much safer than the current produce, because, most transgenic crops do not need pesticides. The corporation points out that, farmers indiscriminately apply pesticides,

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thereby exposing themselves and the consumer to these hazardous chemicals. As transgenics reduce environmental pollution in this aspect, it is indeed a noble step towards humanity. However, the same organization evolved the "terminator technology" which is unethical as far as pro-farmers view point is considered. If this technologies used, farmers will have to purchase fresh seeds each year in case of pure line varieties and thereby increase the sales and profit of the organization in a geometric progression. In a country like India, in case of self pollinated crops like rice and wheat, the seed replacement rate is very low (less than 10%) i.e. the rest of the seeds used for sowing comes from the previous crop. In pulses, it is still lower (2.5%). Is there any reason to accept such expensive technology keeping in the back drop the economic situation of our farmers?

The terminator seed is undoubtedly an effective weapon against the developing world. The United States Department of Agriculture (USDA), who along with Delta and Pine Land Co., US, got this patent on "Control of plant gene expression", has clearly stated that the basic purpose of inventing this technology is to increase the share of US seeds companies in the global market. In echo of these words, Monsanto, had made a leap by purchasing Cargill seeds, US (seed turnover is more than 250 million dollars) and taking over 26% share of the leading Indian seed company, Mahyco. Buying out Dekalb's two seed companies in the '80s to penetrate Brazil's huge seed market, perhaps marked the beginning of Monsanto's march towards an active corporate take over and now it has come back with a rejuvenated vigour. In longer run this will become a big threat

to our national seed security. Our dependence on TNCs for seeds will increase. If at the peak sowing time of a crop, the TNCs decide to withdraw the seed supply or they are forced to do so due to some intrinsic matters, the fertile fields will be left barren and unused. The godowns will be full of seeds, that will not germinate, because they are all terminator seeds. The ultimate result will be a total crop failure, leading to mass starvation and loss of human lives.

Does this mean that biotechnology is only a saga of woe, poverty and pessimism? Obviously not. It was a single gene from India, that saved the muskmelon crop from the downy mildew disease in US. Another Indian gene provided American sorghum resistance to green bugs resulting in a 12 million dollars profit to the US farmers. An Ethiopian barley plant happened to have one gene that now protects California's barley crop from yellow dwarf virus. A 'hopeless' wild wheat plant from Turkey, provided genes that saved African wheat from the deadly

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menace - the stripe rust. Even terminator technology can be used as an advantage - it prevents pre-harvest sprouting of grains due to rains at maturity. Moreover, private sector will be now invest more in research and development of pure line varieties which will result in a stiff competition between it and the public sector, the crop of which is to be reaped by the farmers. Research at the laboratory level have churned out crops with specific properties targeted at specific customers. Centre for Plant Molecular Biology (CPMB) under Prof. Ashish Dutta is developing potatoes with extra protein, while at the Indian Agricultural Research Institute (IARI) mustard with low saturated fatty acid content and high waxiness is being developed under the dynamic leadership of Dr. R.P. Sharma.

The products of biotechnology can only be accepted after they have undergone rigorous trials at various locations and under various ecological conditions. Analysis should be carried out at various levels, to finally declare, a product to be safe for consumption. Disturbing the balance of Mother Nature has become imperative for the sheer existence of human civilization. The productivity has to be increased to feed the increasing millions and that too, with limited resources. There was no option left but to tamper the basic entity of life - the gene. Nature being tolerant, changes herself accordingly to the needs of human being. Whether she does the same or not, can be visualized by the gentle dripping of the sand in the onward march of time.

Biotechnology :
Myths and Realities

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